Mechanical Engineering

The Journal of the American Society
of Mechanical Engineers

Index to Volume 52

January—December
1930

Published by
The American Society of Mechanical Engineers
29 West Thirty-ninth Street, New York

620.6
MEJ
V.52

Index to Mechanical Engineering

Volume 52, January–December, 1930

(BR) denotes Book Review, (C) Correspondence, (CT) Conference Table, (D) Discussion, (Ed) Editorial.

Abbott, William Lamont
Biography ... 289

Abrasive Roll
Machine-tool appliance for grinding ... 858

Accident Prevention
Iron and steel industry ... 1045
Welding, safety rules for gas equipment with special reference to ... 799

Accidents
See Industrial Accidents

Adams, Edward Dean
Early hydraulic-turbine history ... 395

Adamson, Dr. Daniel
Obituary (Ed) ... 1108

Aerial Navigation
See Aerial Transportation; Aviation

Aerial Transportation
See also Aeronautics; Aircraft; Air Mail; Airplanes; Airports
Air transport and civil flying development 6
Air-transport mileage of the world ... 7
Business relation to ... 919
Fare reductions (Ed) ... 568
Flying from the private-owner's standpoint ... 974
Future of ... 596
Paris to New York by air (Ed) ... 934
Radio beacons, directive, safety results expected from ... 847
Reasons most air lines do not pay ... 787

Aerodromes
See Airports

Aerodynamics
See also Aeronautics; Airplanes
Applied, developments in science of ... 489
Bodies moving through air, pressures on 499
Dynamic similarity, theory of ... 500
Friction on thin plate ... 500
Leonardo da Vinci's studies ... 888
Progress ... 5
Simplified aerodynamics (BR) ... 942
Theoretical treatment ... 499
Wing-lift theory ... 499

Aeronautical Education
Advance in ... 490
Expert-pilot training ... 787
Instrument flying, training in ... 63

Aeronautical Literature
Rare collections acquired through grant from Daniel Guggenheim fund for promotion of aeronautics ... 845

Aeronautic Engines
See Airplane Engines

Aeronautics
See also Aerial Transportation; Aerodynamics; Airplanes
Air meet at Chicago (Ed) ... 937
Dayton meeting ... 729
Developments during Great War ... 486
History of practical aviation ... 485
Langley and the Wrights, work of ... 485
Motorless flight ... 986
National Advisory Committee for Aeronautics Conference at Langley Field ... 767
Progress in ... 3

Aeroplanes
See Airplanes

Agricultural Industry
Application of engineering to ... 956

Air Brakes
Progress in 50 years ... 475

Air Compressors
High-pressure type of G. and J. Weir, Ltd., Cathcart, Glasgow ... 619

Air Conditioning
See Heating and Ventilation

Aircraft
See also Airplanes; Airships
Coefficients of efficiency of certain types 149
Confidence in (Ed) ... 1006
Fluid dynamics for designers (BR) ... 90
Navigation of (BR) ... 646
New types of ... 489
Pilot training—see Aeronautical Education

Aircraft Engines
See also Airplane Engines
Torque meter for ... 989

Aircraft Instruments
See Measuring Instruments

Aircraft Materials
A.S.T.M. meeting at Atlantic City (Ed) 802
A.S.T.M. meeting, portions of papers read at ... 781
Specifications and materials control ... 786

Air Currents
See Aerodynamics

Air Law
Landing of seaplanes on lakes ... 1080

Air-Lift Pumps
See Pumps

Air Mail
See also Aerial Transportation; Aviation
Mileage and traffic statistics for privately operated routes ... 7

Air Navigation
See Aviation; Aerial Transportation

Air Pilots
Training—see Aeronautical Education

Airplane Brakes
Sikorsky multiple-disk brake ... 222

Airplane Construction
See Aerodynamics; Aeronautics; Aircraft; Airplane Engines

Airplane Design
See Aerodynamics; Aeronautics; Aircraft; Airplane Engines; Airplanes

Airplane Engines
Anti-freeze compounds, special ... 222
Approved-type certificates issued in 1929 4
Argus As 8 ... 1081
Circulation of lubricating oil in ... 536
Failures, causes of ... 784
Fuel-spray aero engine ... 922
High-temperature liquid cooling ... 63
Junkers aircraft engine ... 989
Materials of construction ... 783
Power-plant developments ... 489
Rolls-Royce Schneider trophy engine 536, 618
Six years' progress in water-cooled types 986

Airplane Manufacture
See Aeronautics; Airplane Design; Airplane Engines

Airplane Propellers
Controllable-pitch type ... 62

Airplanes
See also Aerial Transportation; Aeronautics; Aircraft
Automatically controlled (Ed) ... 85
Barling low-wing monoplane ... 705
Coefficients of efficiency for various types of ... 150
Design and construction ... 4
Design trends ... 971
Mechanics rigging handbook (BR) ... 645
Military aircraft progress in 1929 ... 8
New York Air Show (Ed) ... 641
Performance, effect of span on ... 619
Protective coatings ... 782
Safe aircraft, development of ... 488
Villiers hydro aeroplane with slotted wings ... 705
Why does an airplane fly? ... 705

Airports
See also Aerial Transportation
Landing fields in the United States on June 30, 1929 ... 12
Landscaping of ... 13
Lighting ... 13
Marking of ... 13
Proximity and accessibility to city ... 12

Air Pumps
See Air Compressors

Air Resistance
See Aeronautics

Airships
See also Aircraft
Commercial possibilities of (Ed) ... 935
"Graf Zeppelin" circumnavigation of the world ... 11
Metalclad dirigible "ZMC-2" ... 489
"R-101" disaster ... 1081

Air Transport
See Aerial Transportation; Aviation

Air Transportation
See Aerial Transportation; Aviation

Air Valves
Automatic air reducing valve ... 619

Airways
See Aerial Transportation; Airports

Aldrin, Edwin E.
Progress in aeronautics ... 3

Alford, L. P.
Management's responsibility for industrial accidents ... 1048
Progress in manufacturing ... 401

Allen, C. M.
The salt-velocity method of water measurement ... 375

Allen, Edmund T.
Safety in aerial navigation through radio communication ... 847

Allen, Horatio
Biography ... 290

Alloy Steels
Chromium-copper structural steels ... 856
Development of ... 416
Field ... 1013
Guns cast centrifugally from ... 856
Properties of some steels containing chromium ... 919

Alloys
See also Alloy Steel; Aluminum Alloys
Copper alloy capable of being hardened 64
Volume changes during solidification ... 205

Aluminum
Aluminum products and their fabrication (BR) ... 872
Increasing use ... 533
Machining, cutting angle for ... 542

Aluminum Alloys
Hiduminium ... 712

American Association for the Advancement of Science
Cleveland meeting (Ed) ... 1110

"American Machinist"
A.S.M.E. fiftieth anniversary number (Ed) ... 568

American Society of Mechanical Engineers
Annual Meeting papers ... 1020
Annual Meeting program ... 1021
Boiler Code—see Boiler Code
Dayton aeronautical meeting ... 729
Detroit meeting ... 727
Fiftieth anniversary impressions ... 509
Fiftieth annual meeting ... 88
Fifty years of ... 261
First annual meeting, register of ... 260
Foreword to April issue of "Mechanical Engineering" by President Piez—"What Is Not Yet, May Be" ... 259
National meeting of the Oil and Gas Power Division at State College, Pa., June 12 to 14, 1930 ... 804
Power test codes—see Power Test Codes
Representative members of the A.S.M.E., roster of former ... 305
Student engineers at French Lick (Ed) ... 1110
Technical development, history of ... 309
Wood Industries Division, fifth annual meeting (Ed) ... 1110

American Society of Refrigerating Engineers
Annual meeting (Ed) ... 84

American Standards Association
American Railway Association contributing to A.S.A. ... 717
Year book ... 866

American Welding Society
Annual report (Ed) ... 640

Ammonia
Superheated vapor, properties of ... 548

Amphibian Planes
See Aerial Transportation; Airplanes

Angell, James Rowland
Engineering education—A layman's view 1

Anti-Freeze Solutions
Airplane engine use ... 222
Special liquids for (Ed) ... 85

Anti-Friction Bearings
See Bearings; Bearings, Roller

Anti-Knock Compounds
Tetraethyl lead on flame and pressure propagation ... 75

Applied Mechanics
Calculation of natural frequencies of vibration of structures and of critical speeds of rotating machinery ... 607
Developments (BR) ... 1113

844631

Fifty-year progress report ... 493
International Congress at Stockholm ... 1012

Arc Welding
See Welding

Armitage, J. B.
The influence of standardization in machine design ... 211

Arrol, William
Biography ... 297

Aspinwall, John Audley Frederick
Biography ... 298

Atterbury, William Wallace
Biography ... 303

Autogyro
Cierva Mark III ... 787

Automobile Accidents
Accident facts, 1930 (Ed) ... 641

Automobile Drives
Gillett automatic clutch and free wheel ... 1083
Millam free wheel and sprag ... 860

Automobile Engines
Hesselman oil engine ... 1082

Automobile Industry
History of the last fifty years ... 491
Influence on materials, processes, and organization ... 491
New meaning of saturation in (Ed) ... 241

Automobiles
Bantam types (Ed) ... 934
Buccialo front-wheel drive car ... 544
Engineering problems ... 1070
New York show ... 167
Steam motor car (C) ... 634

Automotive Fuels
See Anti-knock compounds

Automotive Industry
See Automobile Industry

Aviation
See also Aerial Transportation; Aeronautics; Air Mail
American commercial, post-war developments of ... 487
Commercial lines in Soviet Russia ... 149
League of Nations air fleet (Ed) ... 638
Military value of ... 181
Recent progress in ... 985
Safety factors (Ed) ... 639

Azbe, Victor J.
The photographic recording of smoke ... 504

B

Babcock, George H.
Biography ... 279

Bailey, Alex D.
Carrying the load ... 831

Baker, Benjamin
Biography ... 294

Balancing
Rotating machine parts ... 493

Battleships
See Naval Vessels

Baud, R. V., Wahl, A. M., and Nadai, A.
Stress distribution and plastic flow in an elastic plate with a circular hole ... 187

Bauschinger, Johann
Biography ... 293

Beacons
See Radio Beacons; Aerial Signals and Signaling

Beams
Bending a heavy I-beam (CT) ... 238, 566, 720
Notched, stresses in ... 624

Bearings, Anti-Friction
See also Bearings; Bearings, Roller

Bearings
Chemical composition and physical properties of sand-cast and permanent-mold-cast bearings ... 789
Multiple-pad construction ... 115

Bearings, Journal
Design, general axioms for successful ... 114

Bearings, Roller
Applied to cars ... 477

Bechtel, A. L.
Bending a heavy I-beam (CT) ... 238

Berger, George G.
Fundamentals of management (C) ... 239

Bessemer, Henry
Biography ... 295

Bevel Gears
See Gears and Gearing

Billings, Charles Ethan
Biography ... 281

Bits
See Cutting Tools

Black, Archibald
Air-transport fare reductions (Ed) ... 568
Simplified aerodynamics ... 942

Blake, A. D., and Swain, P. W.
Fifty years of power ... 321

Blooming Mills
Italian three-high blooming and slab-blooming mill ... 549

Blowers
See Fans

Boiler Code
Boiler construction code revisions and addenda ... 77
Errata ... 1102
Fusion welding of pressure vessels, recommended procedure for ... 78
Interpretations by Boiler Code Committee ... 81, 565, 630, 721, 801, 864, 1101
Revisions and addenda ... 557
Welding for boilers, pressure vessels, and steam lines ... 546
Welding, specifications proposed for ... 235

Boiler Code Committee, Work of
Interpretations of code ... 81, 565, 630, 721, 801, 864, 1101

Boiler Control
Siemens system ... 67

Boiler Corrosion
See also Corrosion
Boiler-metal embrittlement (C) ... 82

Boiler Feedwater
See Feedwater

Boiler Furnaces
Features of recent boiler installations ... 15
Firing with oil ... 336
Wall cooling ... 336
Water-cooled ... 704

Boiler Plates
Embrittlement (C) ... 239

Boiler Scale
See Boiler Corrosion

Boiler Tubes
Thickness of ... 715

Boilers
Babcock & Wilcox boiler of 150 hp. which won the award at Philadelphia in 1876. 361
Benson marine boiler with air preheater. 710
Clarkson tube silencer ... 64
Coal-dust firing for Lancashire boilers without a pre-furnace ... 226
Cochran waste-heat boiler installed with a Doxford engine ... 155
Efficiencies ... 337
Feed systems, high-pressure ... 991
Fifty-ninth street station of the Interborough Rapid Transit Company ... 362
Fusible tin plugs for ... 221
High-pressure designs at Edgar station, Edison Electric Illuminating Company of Boston, progressive ... 363
High-pressure steam on board ship ... 709
High-temperature developments ... 365
Higher steam temperatures ... 15
Increase in size ... 15
Locomotive, high pressures for ... 464
Radiant-type ... 229
Seamless forged steel drums for high-pressure work, machining ... 751
Steam generators ... 359
Super-Lancashire type ... 1084
Super-pressure steam, problems involved in operation with ... 601
Water-tube boiler, new German ... 226
Water-tube type advent of ... 359
Wignall-Wollaston gas producer ... 227

Bonus Systems
See Wage Payment Plans

Book Reviews
Airplane mechanics rigging handbook, by Rutherford S. Hartz and Elzor E. Hall ... 645
Applied mechanics, by Frederic N. Weaver ... 1113
Engineering mechanics, by William E. Brooke and Hugh B. Wilcox ... 644
Fundamentals of fluid dynamics for aircraft designers, by Max M. Munk ... 90
Gages and fine measurements, by F. H. Rolt ... 645
German treatise on heat engines, by A. Loschge ... 731
Group incentives, by C. C. Balderston ... 808
Industrial heat transfer, by A. Schack ... 732
Ingenious mechanisms for designers and inventors, by Franklin D. Jones ... 1015
Les applications des rayons X, by J. J. Trillat ... 1112
Machine design, by P. H. Hyland and J. B. Kommers ... 643
Principles of engineering economy, by Eugene L. Grant ... 1014
Quantum mechanics, by Edward U. Condon and Philip M. Morse ... 1112
Report of the investigation of engineering education, 1923–1929 ... 940
Robots or men? by H. Dubreuil ... 941
Scientific management in American industry, by The Taylor Society ... 168
Sheet steel and tin plate, by R. W. Shannon ... 1112
Simplified aerodynamics, by Alexander Klemin ... 942
Standard costs, by G. Charter Harrison ... 1014
Strength of materials, by S. Timoshenko ... 1112
The aluminum industry, by J. D. Edwards, F. C. Frary, and Zay Jeffries ... 872
The navigation of aircraft, by Logan C. Ramsey ... 646
Wage incentive methods, by Charles Walter Lytle ... 643
Work routing in production, by John Younger ... 731

Book Reviews and Library Notes
90, 168, 247, 573, 643, 731, 808, 872, 940, ... 1014, 1112

Books Received
Brief notes on new books received by Library ... 90, 169, 247, 573, 646, 732, 809, 872, 942, 1015, 1114

Brakes
See Air Brakes; Airplane Brakes; Electric Brakes

Bramwell, Frederick Joseph
Biography ... 293

Brashear, John Alfred
Biography ... 286

Breed, E. M. The Pelton wheel ... 386

Bridges
Hudson River suspension ... 587
Tests on riveted and welded types ... 236

Buckingham, Earle
Gages and fine measurements (BR) ... 645

Buildings
Electric steam heating for ... 621
Room cooling ... 356

Bullets and Shells
Markings on when fired from small arms, ... 107, 1065

Burners, Pulverized-Coal
See Pulverized-Coal Burners

Business Conditions
Business cycles and the present depression (Ed) ... 936
Predictions regarding (Ed) ... 1109

By-Products
Utilize every possibility of (Ed) ... 723

C

Cables
See Wire Rope

Callendar, Hugh Longbourne
Obituary ... 245

Calorimeters
See Instruments and Apparatus ... 1093

Cammen, Leon
The military value of aviation ... 181

Campbell, E. P.
Efficiency of industrial workers (CT) ... 566

Canadian Provincial Boiler Inspectors
Conference of ... 730

Canet, Gustave
Biography ... 296

Carman, Edwin S.
Biography ... 287

Carboloy
See Tungsten Carbide

Carbon-Manganese Steel
See Alloy Steels

Cargo Handling
See Materials Handling

Carnegie, Andrew
Biography ... 298

Carpenter, Howard B.
Treating wood for use in lining refrigerator cooling rooms (CT) ... 1004

Carpets
Improvements in manufacture ... 446

Cars
Improvements and developments in materials ... 477

Cars, Freight
Capacities and weights ... 472
Development ... 470

Cars, Passenger
Development of ... 473

Heating system ... 473
Lighting ... 474

Case Hardening
See Nitridation

Casey, Thomas J.
Leaky seams and rivets in boilers following use of water softeners (CT) ... 162

Cast Iron
High-test ... 593
Manufacture ... 416
Tensile strengths from 30,000 to 60,000 lb. per sq. in. ... 214
Transverse tests on (C) ... 933
Widening sphere of (Ed) ... 639

Casting Machines
Permanent-mold machines ... 775

Cathode Oscillographs
See Oscillographs, Cathode

Caustic Embrittlement
See Feedwater Treatment

Cement
Chromite-base ... 621
Hot, physical properties of ... 996

Census
Machines for ... 642

Central Stations
See Power Plants

Centrifugal Pumps
See Pumps, Centrifugal

Chaney, Lucian W. Engineering revision an essential factor in accident prevention ... 1045

Charters, D. B.
Influence of standardization in quantity production ... 213

Christie, A. G.
Economic considerations in the application of modern steam turbines to power generation ... 673, 757

Chromium-Aluminum Steel
See Alloy Steels

Chromium-Nickel
See Alloy Steels

Chromium-Tungsten Steel
See Alloy Steels

"Civil Engineering"
New monthly magazine (Ed) ... 1007

Clark, Daniel Kinnear
Biography ... 290

Clark, Wallace
American management in Europe ... 1051

Clarkson, Coker F.
Died June 4 (Ed) ... 724

Claude, Georges
Power from the tropical seas ... 1039

Clausius, Rudolph Julius Emmanuel
Biography ... 290

Coal
See also Pulverized Fuel
Carbonization of ... 337
Consumed by electric public-utility power plants in 1928 ... 983
Grinding tests with a simple tube mill ... 987
Ignition temperature for coal and semi-coke ... 154
Production of bituminous, 1918–1929 ... 14

Coal Industry
Harold V. Coes paper on (Ed) ... 1106

Coes, Harold V.
Materials handling ... 435

Coke Ovens
Improvements ... 338

Cold Storage
See Refrigeration

Colleges
See Education

Collins, F. W.
Conveying sand hydraulically (CT) ... 1004

Combustion
Radiation and the Planck quantum theory ... 852, 915, 981, 1075

Compressors, Air
See Air Compressors

Concrete Breakers
Gasoline-driven type ... 159

Condensers
See Steam Condensers

Condit, K. H.
Progress in machine-shop practice ... 26

Conference Table
See pp. 83, 162, 238, 566, 635, 720, 1004

Conrad, W. L.
Progress in industrial management ... 28

Conveyors
See also Materials Handling
In paper mills (CT) ... 7, 86

Coode, John
Biography ... 295

Cooley, Mortimer Elwyn
Biography ... 287

Cooling
See also Buildings, Room Cooling
Buildings, successful use in ... 356
Water, substitutes for (Ed) ... 85

Cooling Towers
See Water Cooling Towers

Cooper, Peter
Biography ... 291

Correspondence
See pp. 82, 163, 239, 566, 633, 801, 867, 933, 1001, 1102

Corrosion
See also Boiler Corrosion
Influence of stress range and cycle frequency on ... 855

Corrosion Prevention
Foiling as protection ... 788
Protecting steel parts of airplanes ... 782

Cosmic Rays
Notes on ... 698

Costs
Standard (BR) ... 1014

Couplers
Automatic, development of ... 476

Couplings
Hydraulic for locomotives driven by internal-combustion engines ... 625
Reaction type, British fluid-transmission devices of ... 923
Steele-Shaw flexible coupling ... 623

Cox, O. L.
Destruction test of an electrically welded superheater drum ... 17

Coxe, Eckley Brinton
Biography ... 280

Cranes
Design trend ... 36
Special lubricating problems ... 1059

Crude Oil
See Oil

Cruisers
See Naval Vessels

Cupolas
Oxygen-enriched air for cupola blowing ... 537
Poumay type ... 920

Current Mechanical Engineering Literature
Engineering Index items ... 95, 173, 251, 577, 657, 735, 813, 877, 945, 1031, 1117

Cutting Tools
Lathe, ranges of cutting angles for ... 542
Metal hard-facing ... 222
Perdurum (alloy steel) ... 224
Tungsten carbide, grinding ... 684, 778
Tungsten carbide, instructions for use of ... 683

D

Dams
Construction, development in ... 400
Construction, new methods of ... 21

Dana, Samuel T.
Training men for the wood-using industries ... 896

Daugherty, R. L.
Pumping machinery ... 381

Davis, Edward F. C.
Biography ... 281

Dawes Plan of International Settlement
Comparison with Young plan ... 743

DeConingh, E. H.
Conveyors in paper mills (CT) ... 867

De Ferranti, Sebastian Z.
Obituary ... 246

De Freminville, Charles
Biography ... 300

De Laval, Carl Gustaf Patrik
Biography ... 298

Deutsch, Z. G., Larsen, A. M., and Young, H. F.
Design of steam piping to care for expansion (C) ... 1104

Die Castings
Zinc-base ... 223

Dies
British die-tool treatments ... 70

Diesel Engines
Advance ... 18
Beardmore Diesel-electric locomotive tests on ... 68
Comparison with gasoline engines ... 789
Compounding and supercharging of ... 711
Diesel-steam plant in a printing house ... 861
Generic name for injection oil engines ... 970
Marine installations with particular reference to auxiliary machinery ... 858
Peak-load use ... 622
Peak-load work in Germany ... 622
Road transport applications ... 789
Story of ... 349
Supercharging blower for ... 546
Use in naval vessels ... 484
Vulcan coupling for geared type ... 541

Diesel, Rudolph
Biography ... 299

Dilot, J.
How safe is a factor of safety? ... 984

Diphenyl
Application to boilers ... 64

Direction-Finding Apparatus
See Radio Beacons

Domestic Heating
See Heating and Ventilation

Donald, W. J.
Decentralized employee training ... 963

Dodge, James Mapes
Biography ... 283

Dow, Alex
Biography ... 289

Draft Gears
Development ... 476

Draft Tubes
Tests ... 921

Dredge, James
Biography ... 294

Dredge Pumps
See Pumps

Dredges
Pump sand and gravel dredge ... 992

Drums, Boiler
See Boilers

Durand, William Frederick
Biography ... 288
Hydraulic theory ... 367

Dwelshauvers-Dery, Victor
Biography ... 294

Dyes
For textiles ... 443

E

Economics
Changes in 1929 ... 105

Edison, Thomas Alva
Biography ... 297

Editorial
See pp. 84, 164, 240, 568, 638, 722, 802, 868, 934, 1006, 1106

Edmonds, G. S.
Troubles with high boiler pressures ... 83

Education
Air pilots—see Aeronautical Education
American engineering colleges, characteristics of ... 503
Commencement (Ed) ... 722
Engineering education—a layman's view ... 1
Engineering, broadening effects demonstrated by statistics (C) ... 1102
Engineering colleges, research at ... 504
Engineering colleges, responsibilities and opportunities of ... 505
Engineering-drawing summer school (Ed) ... 871
Engineering education in the U. S. A., development of ... 503
Engineering faculties ... 2
Engineering, report on (BR) ... 940
Engineering training ... 747
Interdependence of industry, the engineering profession, and engineering education ... 503
Lehigh, industry and education at (Ed) ... 1108
Observations on 38th annual meeting of S.P.E.E. ... 806
Technical, value of ... 503
Wood-using industries, training men for ... 896

Eiffel, Alexander Gustave
Biography ... 295

Einstein, S.
Machine-tool milestones, past and future ... 959

Elasticity
Elastic stability ... 495
Favre method of determining elastic stresses ... 550
Theory of ... 494

Electric Brakes
Magnetic track brakes ... 715

Electric Circuit Brakers
Quenched-arc circuit-breaker switch..... 620
Electric Equipment
Low-voltage hazard..... 1105
Electric Generators
New York Edison Company's 160,000-kw. generator..... 225
Electric Generators
Turbine generators, developments in.... 928
Ventilating system of the 160,000-kw. single-shaft generator, New York Edison Company..... 226
Electric Heating
See also Heating, Heating and Ventilation
Heat storage with oil..... 629
Electric Motors
Design and application of, modern trends in..... 201
"Kosfi-Leading" compensation induction type..... 1083
New three-phase commutator type..... 222
Electric Trucks
See Industrial Trucks
Electrometallurgy
Electrodeposition of iron..... 537
Elevators
Work of research committee on..... 200
Embrittlement
See Boiler Plates, Embrittlement
Emley, Warren E.
Products from fibrous and granular wood..... 953
Emmet, William Leroy
A.S.M.E. medalist..... 523
Employees
Decentralized training..... 963
Employment
Hours of labor..... 454
Short-period guarantee (Ed)..... 1106
Stabilization of..... 610
Emulsions
Removal of oil and grease from metal parts with..... 993
Energy
Radiation, distribution as judged from end states of reaction..... 853
Undeveloped sources (Ed)..... 803
Engineering
See also Mechanical Engineering
Hydroelectric..... 399
Leadership..... 766
Mechanical, prospects in..... 3
Science and, relationship between..... 595
Should the manufacturer or the user pay the cost?..... 615
Engineering Economy
Principles of (BR)..... 1014
Engineering Education
See Education
Engineering Index
Selected items from.....95, 173 251, 577, 657, 735, 813, 877, 945, 1031, 1117
Revised classifications (Ed)..... 164
Engineering Mechanics
See Mechanics
Engineering Standards
See Standardization
Engineers
Common intellectual interests of (Ed)... 1006
Dependence of the modern community on..... 103
Economic status in the federal service .....142, (C) 567
Growing obligations of (Ed)..... 802
Improvement of the social and economic status of (C)..... 633
Registration laws of the United States... 215
Relation to petroleum industry..... 426
Relation to purchasing of materials (Ed). 84
Social and economic status, improvement of..... 634
Status of the mechanical engineer in the machinery industries..... 219
Things done right (Ed)..... 722
Why none on advisory board of Princeton School of Public and International affairs (Ed)..... 569
Work and influence of..... 827
Engines
See Airplane Engines; Diesel Engines; Gas Engines; Gasoline Engines; Oil Engines; Steam Engines
Ennis, William D.
Principles of engineering economy (BR). 1014
Etching
Numbers on thickness gages (CT)..... 1005
Exhibits
Move to discourage liquor at..... 73
Exploration
Arctic discoveries (Ed)..... 1006
Extensometers
Concentrated stress measurement..... 611

F

Fabrics
See Textiles
Factories
See Industrial Plants
Factors of Safety
See Safety Factors
Fans
Leach-Woods propeller fan for inflammable gases..... 152
Feedwater
Conditioning..... 106
Heating for locomotives..... 463
Reheating and regenerative heating..... 677
Feedwater Heaters
Use with steam-powered drilling equipment..... 1084
Feedwater Treatment
Leaky seams and rivets in boilers following use of water softeners (CT)..... 162
Ferris, John Price
Who should pay the engineer?..... 615
Field, Crosby
Management of the small manufacturing plants: its characteristics and advantages..... 901
Fiock, E. F., Osborne, N. S., and Stimson, H. F.
Report on progress in steam research at the Bureau of Standards, with determinations of heat content and latent heat up to 270 deg. cent..... 127
Fire
Economic loss from..... 631
Fire-Alarm Systems
In metal mines..... 1105
Fire Prevention
Making farm buildings safe..... 632
Fits
Standard, international unification of.... 905
Flanders, Ralph E.
The work and influence of the engineer.. 827
Flockton, Arthur H.
Etching numbers on thickness gages (CT) 1005
Flow of Air
See Aerodynamics; Flow of Fluids; Flow of Gases
Flow of Fluids
See also Aerodynamics
Hydraulic characteristics of flow of water around bends..... 988
Measurement of..... 372
Pipe-friction losses..... 969
Flow of Gases
See also Flow of Fluids
Velocities exceeding the velocity of sound 497
Flow of Liquids
See Flow of Fluids
Flow of Oil
See Flow of Fluids
Flow of Water
See Flow of Fluids
Fluid Meters
See Measuring Instruments
Fluids
Flow of, see Flow of Fluids
High- and low-viscosity..... 497
Mechanics of fluid bodies..... 496
Flying
See Aerial Transportation; Aeronautics
Flywheels
Energy of rotation and revolution (CT). 720
Foch, Ferdinand
Biography..... 302
Foresman, J. W.
Standard cost (BR)..... 1014
Forge-Shop Practice
Old-time forging methods..... 406
Forging Machines
Hollow rolling mill..... 158
Forgings
Locomotive elements entering into..... 153
Locomotive, higher quality for..... 542
Methods and apparatus employed by John Brown & Co., Ltd., Sheffield..... 158
Foundry Practice
See also Cupolas
Casting railway bronze bearings in permanent molds..... 788
Centrifugally cast alloy-steel guns..... 856
Manufacture of guns by centrifugal casting..... 796
Fourier, Jean Baptiste Joseph
Centenary..... 672
Fox, Charles Douglas
Biography..... 297
Freeman, John Ripley
Biography..... 283
Freight Cars
See Cars, Freight
Freight Handling
See Materials Handling
Freight Transportation
See Aerial Transportation; Railroad Transportation
Fritz, John
Biography..... 281
Fuel Oil
See Oil Fuel
Fuels
See also Coal; Combustion; Natural Gas; Pulverized Fuel
Fuel Utilization in 1929, Progress in.... 13
Improved uses..... 417
Low-temperature carbonization, German Tormin process of..... 224
Problems discussed at American Chemical Society meeting..... 987
Research..... 19
Utilization..... 334
Utilization, progress in..... 13
Fullarton, G. M.
Wage-incentive methods (BR)..... 643
Furnaces
See Boiler Furnaces
Fusion Welding
See Welding

G

Gages
Conference of manufacturers and users of 632
Fine measurements (BR)..... 645
Thickness, etching numbers on..... 1105
Gaillard, John
International unification of standard fits..... 905
Garner, E. F.
Machine design (BR)..... 643
Gas
See Natural Gas
Gas Engines
Development in 50 years..... 347
Progress in..... 40
Single-cylinder type, increasing speed of. 540
Gas Pipe Lines
See Pipe Lines
Gas-Power Engineering
Progress in..... 38
Gas Turbines
Lorenzen type and supercharger for gasoline and Diesel engines..... 665
Problems (Ed)..... 724
Gasoline Engines
See also Internal Combustion Engines
Comparison with Diesel engines..... 789
Scientific research in the United States on..... 858
Gears
Grinding, developments in..... 627
Load and stress cycles in gear teeth (C).. 163
Reo composite herringbone gears..... 224
Generators, Electric
See Electric Generators
Giacomelli, R.
The aerodynamics of Leonardo da Vinci. 888
Gibson, F. M.
Progress in steam-power engineering.... 47
Gibson, Norman R.
Gibson method for field testing of hydraulic turbines..... 374
Giese, Henry
The application of engineering to the agricultural industry..... 956
Gilbreth, Lillian M.
Robots or men? (BR)..... 941
Gillett, H. W.
The aluminum industry (BR)..... 872
Glass
Articles, forming by centrifugal force.... 70
Gliders
Popularity of (Ed)..... 640
Gliding
Beneficial in training of airplane pilots... 536
Early experiments in..... 485
Goethals, George Washington
Biography..... 300
Goss, William Freeman Myrick
Biography..... 285

Governors
See Hydraulic Turbines, Governors; Steam Engines, Governors; Steam Turbines, Governors
Grashof, Franz
Biography ... 293
Greene, A. M., Jr.
Steam piston pumps ... 378
Griffin, Robert Stanislaus
Biography ... 301
Marine engineering ... 480
Griffith, Leigh M.
Crankless reciprocating machines (C) ... 1104
Grinding
Abrasive roll for ... 858
Grinding Wheels
New code for ... 910
Group Bonus Systems
See Wage Payment Plans
Guggenheim, Daniel
Obituary (Ed) ... 1009
Gunther, Charles O.
Markings on bullets and shells fired from small arms ... 17, 107
Gyroscopes
Application of principle of ... 493

H

Hallauer, Otto
Biography ... 291
Hardness Testing
Materials ... 501
Harrington, John Lyle
Biography ... 288
Hartness, James
Biography ... 286
Harza, Leroy F.
Hydroelectric engineering ... 399
Haswell, Charles Haynes
Biography ... 298
Heat
Conduction, theory of ... 864
Latest heat of evaporation of water ... 124
Mean-temperature-difference chart ... 995
Mechanical equivalent of, passing of ... 139
Symbols, standardization of ... 554
Heat Convection
See Heat Transmission; Thermodynamics
Heat Engines
German treatise on (BR) ... 731
Heat Transfer
See Heat Transmission
Heating Furnaces
See Furnaces, Heating
Heat Storage
Electric oil system ... 629
Heat Transmission
Between fluids and solids ... 690
Condensation of steam in a vertical pipe ... 231
Flash heat exchanger ... 545
Heat loss depending on the average tube-wall temperature and velocity of steam flow ... 232
Heat transfer in water pipes ... 547
Industrial heat transfer (BR) ... 732
Radiant heat transmission ... 699
Radiation between solids, factors for use in equation for ... 700
Through insulation ... 693
Heat Unit
International standard ... 132
Joule, increasing use of as basic laboratory unit of heat ... 139
Heating
See also Electric Heating, Heating and Ventilation
Electric steam heating for buildings ... 621
Heating and Ventilation
See also Heating
Domestic heating, developments in ... 18
Heck, Robert C. H.
Notes on formulation (steam equations) ... 133
Heilman, R. H.
Transmission of heat through insulation ... 693
Heltzel, W. G.
Progress in the petroleum industry ... 41
Helical Gears
See Gears
Herbert, Edward G.
Nitrided steel: measuring the hardness and thickness of the case ... 597
Herreshoff, Nathaniel Greene
Biography ... 302
Herrmann, Friedrich Gustav
Biography ... 293
Herschel, Clemens
Obituary ... 571
Hersey, Mayo D.
Lubrication research ... 772
Hiduminium
Aluminum alloy, new, properties and analysis ... 712
Higbee, Frederic G.
Engineering-drawing summer school at Pittsburgh (Ed) ... 871
Hirn, Gustav Adolph
Biography ... 291
Hirsch, Joseph
Biography ... 304
Hollander, A.
Centrifugal pumps ... 382
Holley, Alexander Lyman
Biography ... 277
Hollis, Ira Nelson
Biography ... 286
Obituary ... 938
At Harvard University (C) ... 1103
Holloway, Josephus Flavius
Biography ... 278
Holman, Minard Lafever
Biography ... 284
Hoover, Herbert Clark
Biography ... 303
Hoover medalist ... 523
Hottel, H. C.
Radiant heat transmission ... 699
Houser, A. M.
Influence of standardization in the heat and power industry ... 210
Hubbard, Guy
Metal-working plants ... 404
Hughes, Cornelius L.
The strength of welded bull plugs ... 911
Hulse, Edward Pierce
Progress in the printing industries ... 50
Humphreys, Alexander Crombie
Biography ... 285
Hunt, Charles Wallace
Biography ... 282
Hunt, Edward Eyre
Economic changes in 1929 ... 105
Hunt, Robert Woolston
Biography ... 280
Huson, Winfield S.
The printing industries ... 419
Hutton, Frederick Remsen
Biography ... 284
Hyde, Asa P.
Leaky seams and rivets in boilers following use of water softeners (CT) ... 162
Hydraulic Equipment
Use in making plastic molded parts ... 889
Hydraulic Turbines
Adjustable-vane type ... 21
Advances made in ... 399
Cavitation in ... 538
Draft tubes, developments in design of ... 392
Early history ... 395
Kaplan's experiments ... 393
Kaplan automatic adjustable-blade ... 621
Francis and propeller-type in Sweden ... 532
Francis turbines for high heads ... 392
Gains made in fifty years ... 394
Gibson method for field testing ... 374
High-speed propeller type ... 21
Impulse type ... 21
I. P. Morris turbine for Niagara Falls Power Company ... 398
Installation at Niagara Falls (C) ... 719
Large-capacity units for high heads, increasing use of ... 390
Propeller runner, advent of ... 392
Propeller-type, Moody patent on ... 72
Reaction-type progress ... 22
Three types of ... 367
Wheels, dimensions of ... 857
Hydraulics
Design developments ... 789
Fifty years' progress in ... 366
Hydraulic power transmission, characteristics of the nine basic systems of ... 790
Model testing ... 20
Progress in ... 19
Theory of ... 367
Theory of, advance in ... 370
Hydrodynamics
Fifty years of ... 498
Laminar and turbulent flow of water in pipes ... 496
Hydroelectric Power Plants
Factors affecting the economics of ... 19
Governmentally owned ... 20
Large jet dispersers at Arapuni ... 539

I

I-Beams
Heavy, bending ... 566
Ice Plants
See also Industrial Plants; Refrigeration
First large ice plants ... 353
Ice Industry
See also Industries; Refrigeration
Increase of refrigeration and population, 1904–1928 and probable increase of both to 1934 ... 354
Induction Motors
See Electric Motors
Industrial Accidents
Analysis in Manville factory ... 1049
Management's responsibility for ... 1048
"Industrial and Engineering Chemistry"
Cooperation gratefully acknowledged (Ed) ... 568
Industrial Education
See Education
Industrial Management
See also Production Control; Wage-Payment Plans
Accident prevention, duty in ... 631
European industry, characteristics of management in ... 1051
Fifty years of progress ... 447
Foreman-manager plan at Armco ... 543
Fundamentals of (C) ... 239
Human energy, directing and using ... 118
Industrial workers, efficiency of (CT) ... 566
Methods in the Richman Bros. Co., Cleveland, Ohio ... 708
Progress in ... 28
Scientific management in American industry (BR) ... 168
Shop management (Ed) ... 638
Small plant characteristics and advantages ... 901
The 1922 ten-year progress report ... 452
Uneconomical minimum-cost production ... 899
Work routing in production (BR) ... 731
Industrial Plants
See also Power Plants
Economic steam pressures and temperatures in ... 765
Robots or Men? (BR) ... 941
Industrial Relations
Progress in manufacturing industry ... 401
Industrial Trucks
See also Materials Handling
New types ... 33
Industries
Preparedness for war ... 206
Rapid changes in (Ed) ... 868
Instalment Selling
Widened demand for manufactured goods ... 73
Instruments
See also Measuring Instruments
For measuring heat of combustion ... 1093
For smoke-density determinations ... 999
Internal-Combustion Engines
See also Airplane Engines; Diesel Engines; Gas Engines; Oil Engines
Centrifugally cast cast-iron engine cylinder liners ... 921
Three-cylinder two-stroke-cycle engine for British car ... 859
Two-stroke engine, new type of ... 988
International Standards Association
Conferences in Paris ... 932
Iron
Electrodeposition of ... 537
"Iron Age"
Editorial board changes (Ed) ... 638
Iron Alloys
Research organized (Ed) ... 570
Iron and Steel
See Iron; Steel
Iron and Steel Industry
Progress in 1929 ... 23
Progress since 1880 ... 415
Iron and Steel Plants
See Blooming Mills; Rolling Mills
Isherwood, Benjamin Franklin
Biography ... 296

J

Jacks
Anchor puller type ... 626

Jacobus, David Schenck
Biography ... 286

Jasper, T. McLean
Building vessels for high-pressure and high-temperature service ... 193

Jeter, Sherwood F.
Obituary ... 166

Jigs and Fixtures
Gage making becomes a profession ... 413

Johnson, Willard C.
Modern trends in the design and application of electric motors ... 201

Jones, Bradley
The navigation of aircraft (BR) ... 647

Journal Bearings
See Bearings, Journal

Jupp, Alfred J.
Engineering and industrial standardization ... 552

K

Kamo, Masawo
Biography ... 304

Karr, Richard D.
Bending a heavy I-Beam (CT) ... 566

Keenan, J. H.
Comparisons (steam tables) ... 130

Ketchen, W. L. CO_2 for manufacture of refrigerant (CT) ... 83

Keyes, F. G., and Smith, L. B.
Report on progress in steam research at the Massachusetts Institute of Technology ... 123
Vapor pressure of water from the ice point to the critical temperature ... 124

Kimball, A. L. Energy of rotation and revolution in flywheels (CT) ... 720
Rigid dynamics and vibrations ... 493

Kimball, Dexter Simpson
Biography ... 288

Kirsch, J. L.
Rusting of tin plate in storage (CT) ... 163

Klemin, Alexander
Aeronautics ... 485
The N.A.C.A. conference at Langley Field ... 767

Knitting
See Textiles, Knitting

Knives
See Woodworking Machinery, Knives

L

Laboratories
Engineering, Lehigh University ... 883

Labor-Saving Devices
See also Materials Handling
Rapid development of ... 417

Langill, R.
Scandinavian gang saws for closer utilization of timber (C) ... 1001

Lanphier, Major T. G.
The future of air transportation ... 596

Larkin, F. V., and Seyfert, S. S.
A new engineering laboratory ... 883

Larsen, A. M., Young, H. F., and Deutsch, Z. G.
Design of steam piping to care for expansion (C) ... 1104

Lathes
See also Machine Tools
Evolution of ... 411
Tunet, British combination ... 922

Léauté, Henri
Biography ... 296

Leavitt, Erasmus Darwin
Biography ... 278

Le Chatelier, Henri
Biography ... 303

Le Conte, Joseph N.
Advance in the theory of hydraulics ... 370

Ledell, W. A.
Conveying sand hydraulically (CT) ... 1004

Lessells, John M.
Mechanics of materials ... 500

Lewis, Wilfred
Obituary ... 166

Lift Trucks
See Industrial Trucks; Materials Handling

Liquid Fuels
See Fuels

Liquids
Viscosity determination ... 233

Lithography
See Printing Industry

Loaders
See Conveyors; Materials Handling

Locomotives
Articulated type ... 465
Beardmore Diesel-electric type ... 68
Boilers and auxiliaries ... 461
Burmeister-Wain Diesel-electric ... 862
Compounding ... 465
Counterbalancing freight type (CT) ... 635
Dimensions and proportions, trend in ... 460
Efficient control, aids to ... 466
Forgings, elements entering into ... 153
Future trends ... 479
High boiler pressures, troubles with (CT) ... 83
High-pressure section ... 464
High-pressure types ... 57
Holmes locomotive poppet-valve gear ... 1085
Innovations of 1900 ... 458
Internal-combustion types ... 469
Limited-cut-off ... 466
Modern types ... 460
Nicholson thermic syphon ... 464
Outside valve motions ... 466
Power-operated devices ... 468
Pulverized-coal firing on ... 18
Standardization effects economies ... 997
Tenders ... 468
Traction-increasing devices ... 467
Turbine and steam reciprocating engines ... 714
Typical locomotive of 1880 ... 458
Typical locomotive of 1918 ... 459
Wiesinger high-pressure type (C) ... 633
Wyss-Krupp turbine type ... 863

Loeffler, St.
Problems involved in operation with super-pressure steam ... 601

Lorenzen, Christian
The Lorenzen gas turbine and supercharger for gasoline and Diesel engines ... 665

Loring, Charles Harding
Biography ... 280

Low, Frederick Rollins
Biography ... 288
Editor Emeritus of "Power" (Ed) ... 165
Power ... 319

Lubricating Oil
Viscosity effect and test methods ... 541

Lubrication
Crane ... 1059
Fluid-film, progress of ... 114
Research in ... 772

Lumber
Production from cornstalks ... 849

Lumber Industry
See Timber

Lynn, A. M.
Production of plastic molded telephone parts ... 889

Lytle, Charles W.
Group incentives (BR) ... 808
Industrial management ... 447

M

Machine Design
Application of mechanics to, recent developments in ... 607
Book review (BR) ... 643

Machine-Shop Practice
Progress in ... 26

Machine Shops
Old-fashioned type ... 407

Machine Tools
Advent of ... 312
Curve of development ... 411
Developments in German design ... 623
Effect of obsolete machines on readjustments of the machine age ... 617
Heavy-duty thread-milling machine ... 225
Hydraulic operation of ... 708
KOS abrasive roll ... 858
Milling machines, importance of ... 412
Past and future ... 959
Up-to-date types of 1880 ... 410

Machinery
Balancing rotating parts ... 493
Cold-heading machine for rivets, screw blanks, etc ... 230
Machine age ... 311
Obsolescence ... 2
Rotating, critical speeds of ... 607

Mackay, Leonard R.
Treating wood for use in lining refrigerator cooling rooms (CT) ... 566

Magdeburger, E. C.
Progress in oil- and gas-power engineering ... 38

Magnesium
Alloys of ... 976
Industrial history of ... 958

Main, Charles Thomas
Biography ... 287

Mallet, Anatole
Biography ... 299

Management
See Industrial Management

Manganese Steel
See Alloy Steels

Mangelsdorf, T. A.
Progress in fuel utilization in 1929 ... 13

Manning, Charles H.
Biography ... 299

Manufacturing Plants
See also Industrial Plants
Value of products per worker from 1880 to 1930 ... 345

Marble, Edwin H.
Textile industry ... 440

Marine Engineering
Developments that contributed to economy ... 481
Early stages of naval development ... 480

Marine Engines
Development of the triple-expansion as a substitute for the compound engine ... 480
Heat flow to liners, heads, and pistons ... 706

Marks, Lionel S.
Ira Nelson Hollis at Harvard University (C) ... 1103

Mass Production
See Production Control

Materials
Enormously strong, possibilities in production of ... 849
Hardness testing ... 501
High-temperature testing ... 501
Increased use when cheap (Ed) ... 1007
Mechanics of ... 500
Mechanics of plastic state of matter ... 502
Mechanics of, statistical element in ... 839
Strengths, development of theory of ... 502

Materials Handling
See also Conveyors; Cranes; Industrial Trucks
Outstanding developments ... 435
Progress in ... 32

Mathematics
Solving practical problems (Ed) ... 240

Matter
Transmutation of ... 780

McAdam, D. J., Jr.
Boiler-metal embrittlement (C) ... 82

McAdams, W. H.
Heat transmission between fluids and solids: conduction and convection ... 690

McCausland, J. R.
The use of wire rope by steam-electric generating plants ... 529

McConnell, R. S.
Progress in railroad engineering ... 57

Mead, Daniel W.
Development of the deep-well turbine pump (C) ... 567

Measuring Instruments
See also Gages
Extensometer for the measurement of concentrated stresses ... 611
Favre's optical method for the photoelasticimetric determination of elastic stresses ... 550
Fluid-metering practice ... 968
Torque meter for aircraft engines in flight ... 989

Mechanical Engineering
See also Engineering
Fifty years ago ... 315

Mechanics
Engineering (BR) ... 644
Quantum, leading developments (BR) ... 1112

Mechanisms
Ingenious types for designers and inventors (BR) ... 1015

Mechanization
Mechanized civilization ... 830
Retrogression in (Ed) ... 1106

Meier, Edward Daniel
Biography 285
Mellon Institute of Industrial Research
Recent activities 600
Melville, George Wallace
Biography 282
Mercury-Vapor Process
Installation in Meadows station of Hartford Electric Light Co. 234
Metals
See also Non-Ferrous Metals
Metals
Fatigue and overstress, correlation of 159
Oil and grease removal from 993
Static properties, determination of 500
Metal-Working Plants
See also Industrial Plants
Mechanized industries, rise of 404
Metallurgy
Development of science of 416
Michell, A. G. M.
Progress of fluid-film lubrication 114
Miller, Fred J.
Biography 287
Gantt medallist 523
Miller, H. E.
Ingenious mechanisms for designers and inventors (BR) 1015
Moldenke, Richard
High-test cast iron 593
Molloy, E.
Airplane mechanics rigging handbook (BR) 645
Monroe, Wm. S.
The A.S.M.E., and standardization under the A.S.A. 209
Moody, L. F.
Progress in hydraulics 19
Moody, Lewis F., and Van Leer, Blake, R.
Fifty years' progress in hydraulics 366
Moody, Wm. M.
Industrial preparedness 206
Moore, H. F.
Strength of materials (BR) 1112
Morgan, Charles Hill
Biography 282
Morrison, L. H.
Oil- and gas-engine development 347
Morton, R. B.
Economics of railway electrification 821
Motor Cars
See Automobiles
Motor Trucks
Kerr, Stuart and Co. Diesel-engine truck 544
Scammell 100-ton transporter 624
Motors, Electric
See Electric Motors
Mueller, E. F.
The passing of the mechanical equivalent of heat 139
Museums
Museums inspire youth (Ed) 868

N

Nadai, A., Baud, R. V., and Wahl, A. M.
Stress distribution and plastic flow in an elastic plate with a circular hole 187
Nansen, Dr. Fridjof
Nansen the engineer (Ed) 640
Naphtha
See also Petroleum Products
Steam stills for distillation 426
National Defense
Advance along engineering lines 507
Defense against gas 860
National Metal Exposition
Metal week in Chicago 1013
Natural Gas
Increase in utilization of 14
Naval Vessels
Armament tests (Ed) 1107
Diesel power for 484
Electric drive for 483
Introduction of turbine drive in 482
Oil fuel and superheated steam, first use of 483
Needs, S. J.
Progress of fluid-film lubrication (D) 118
Newcomb, Charles Leonard
Obituary 642
Nickel
Refining process 156
Nickel-Molybdenum Steel
See Alloy Steels
Nickel Steel
See also Alloys; Alloy Steels; Steel
Treatment for dies 70
Nitridation
Measuring the hardness and thickness of case 597
Noise Reduction
Engineers should assist in (Ed) 869
Non-Ferrous Metals
Physical properties of 980

O

Obsolescence
See Machinery—Obsolescence 2
Oil
Firing of boiler furnaces with oil 336
Use for fuel of naval vessels 483
Oil and Gas Power
Progress in 38
Oil Coolers
Calculation of oil temperatures 1089
Oil-Electric Locomotives
See Locomotives
Oil Engines
See also Diesel Engines
Bibliography 41
Developments in 39
Development in 50 years 347
Early ventures 349
Economy of operation with heavy fuel 859
Hesselman type for motor vehicles 1082
High-powered, for land purposes 706
Low-compression 352
Oil Fields
Colombia development 795
Peru, operation in 795
Oil Fuel
Burner design, improvements in 18
Oil-Pipe Lines
See Pipe Lines
Oil Pumps
See Pumps
Oil Refining
See Petroleum, Refining
Oil Separators
Method used at Oklahoma City 990
Oil Wells
New principle in pumping 712
Ordnance
Carden Loyd baby tank 794
Guns cast centrifugally 796, 856
Orifices
See Flow of Fluids
Ormondroyd, J.
Applied mechanics (BR) 1113
Orrok, Geo. A.
Carbonization of coal 337
Central stations 324
Economics of high-pressure steam 748
Fuel utilization 334
Osborn, Robert R.
Future aircraft-design trends 971
Osborne, N. S., Stimson, H. F., and Fiock, E. F.
Report on progress in steam research at the Bureau of Standards, with determinations of heat content and latent heat up to 270 deg. cent 127
Oscillographs, Cathode
Norinder cathode-ray oscillograph 225
Ovington, Earle
Flying from the private-owner's standpoint 974
Oxholm, Axel H.
Scandinavian gang saws for closer utilization of timber (C) 1003

P

Paints
Metallic, decreasing heat losses by use of 695
Parker, McRea
Progress in textile manufacturing 59
Parsons, Charles Algernon
Biography 301
Passenger Transportation
See Aerial Transportation; Railroad Transportation
Peck, C. B.
Railway transportation 457
Pegram, George B.
Hydrodynamics 498
Perdurum
See Cutting Tools
Perrone, Pio
Biography 301
Perry, Thomas D.
Fifth annual wood industries meeting (Ed) 1111
The wood industries 429
Peterson, R. E.
Load and stress cycles in gear teeth (C) 163
Petroleum
Origin of 421
"Petroleum Mechanical Engineering" (Ed) 1111
Production 422
Refining 424
Research 426
Transportation of 423
Petroleum Industry
Progress in 41
Progress made in the last fifty years 421
Relation of engineers to 426
Petroleum Pipe Lines
Location of main trunk pipe lines in the United States 423
Petroleum Products
Statistics 427
Petroleum Refining
Progress in 45
Pfau, Arnold
Clemens Herschel's invention of the fall increaser (C) 801
Improvement of the social and economic status of the engineer (C) 634
Photoelectric Cells
New uses (Ed) 569
Types of 715
Piez, Charles
"What Is Not Yet, May Be" 259
Pillow Blocks
Link-Belt Timken ball and socket type 792
Pilots
Aircraft, training—see Aeronautical Education
Pipe
See also Flow of Fluids; Pipe Lines
Concrete-pipe manufacture 919
Pipe bends, high-pressure, tests on 545
Tetralin process for cleaning gas pipes 993
Pipe Lines
See also Steam Pipe Lines
Corrosion of 44
Fluid flow and friction in 924
Progress in 41
Water-hammer theory and its applications 376
Piping, Steam
See Steam Pipe Lines
Plate Glass
See Glass
Plates
Stress distribution and plastic flow in an elastic plate with a circular hole 187
Plywood
Developments 432
Hydraulic presses for the manufacture of 626
Research Institute and Consulting Bureau in Berlin 630
Porter, Charles Talbot
Biography 295
Potter, A. A.
Engineering education 503
Powdered Coal
See Pulverized Fuel
Powell, Sheppard T.
General trend of developments in feed-water treatment 106
Power
See also Hydroelectric Power Plants; Power Plants; Steam Power
Developments in half-century 319
Fifty years of 321
From the tropical seas 1039
Horsepower capacity of power facilities used in manufacturing 344
Industrial developments in 50 years 340
Per worker in manufacturing industries 345
Power Generation
Adequate supply, steps taken to insure 831
Alternative methods of 228
Power Houses
See Power Plants
Power Plants
See also Hydroelectric Power Plants
Altitude, effect on power 796
Central-station costs 330

Central-station development in 50 years. 324
Claude's tropical-seas plant (Ed) 1109
Cotton mill, Victoria Mills, West Leigh, Lancashire 65
Deepwater, Penns Grove, N. J. 65
Delaware River central station at Holland, N. J. 625
Diesel plants, engine foundations for 922
East River station, New York Edison Company 332
Fisk Street station, Commonwealth Edison Company, Chicago, Ill. 329
Hand-firing practice in a boiler room fifty years ago 360
Harrison Street station, Chicago, 1894 327
Hell Gate station, United Electric Light and Power Company, New York 330
High-pressure 749
High-pressure-boiler-feed systems 991
Municipal Diesel plant at Hudson, Mass. 1085
Nearly manless boiler plant 990
Ninety-sixth Street station, New York, 1898 328
Operating data of 749
Pearl Street power station, New York City, 1882 325
Representative central stations 333
Sansom Street station, Philadelphia, 1889 326
State Line station operated by the State Line Generating Company, Chicago, Ill. 331
Steam-electric, complete, test code for 74
Synthetic Ammonia and Nitrates, Ltd., at Billingham-on-Tees 862
Trend in 750

Power Test Codes
Complete steam-electric power plants 74
Instruments and Apparatus:
Pt. 3—Temperature measurements: chap. 5, Pyrometric cones 797
Pt. 9—Heat of combustion 1093
Pt. 11—Determination of quality of steam 636
Pt. 17—Determination of the viscosity of liquids 233
Pt. 20—Smoke density determinations 999

Prentice, Donald B.
Broadening effects of engineering education demonstrated by statistics (C) 1102

Presses, Hydraulic
Hydraulic plywood presses 626
Manufacture of phenol-plastic parts 891

Pressure Vessels
See also Boilers
High-pressure and high-temperature service 193
Strength of welded bull plugs 911

Printing Industries
Fifty years' progress 419
Progress in 50

Production Control
Achievements in 401
Meaning of mass production (Ed) 241
Scientific planning 451

Propeller Turbines
See Hydraulic Turbines

Public Utilities
Governmental regulation and supervision of 20

Pulverized-Coal Burners
Burner for fire-tube boiler on the steamer "Donau" 229
Burner of the Kohlenstaub Co. for fire-tube boilers without ignition chambers 229

Pulverized Coke
Use as a fuel 538

Pulverized Fuel
Applications 236
Code approved 1105
Early attempts to use pulverized coal 364
Increased use 16
Selecting fuels for pulverized-coal installations 920
Temperatures for rapid self-heating of powdered coal and the semi-coke made therefrom 154

Pumps
Boiler-feed types 385
Development of the deep-well turbine type (C) 567
Fuel type for airless-injection engines 155
Joseph's Well (C) 163
Steam piston types 378

Pumps, Air-Lift
See Oil Wells, Pumping

Pumps Centrifugal
Development 366
Early types 382
Extended use of 381
First centrifugal pump (C) 163
Hydraulic design, elements essential in 383

Purchasing
Engineer's relation to the purchasing of materials and machinery (Ed) 84

Q

Quantum Theory
Planck, combustion radiation and the 852, 915, 981, 1075

Quereau, John F.
Development of a method of measuring concentrated stresses 611

Quick, Ray S.
Development of water-hammer theory and its applications 376

R

Radio Beacons
Directive types installed 847

Radio Communication
Symbols, standardization of 556

Rail Cars
Gasoline-engine driven 474
Rail-motor-car service, development of 474

Railroad Electrification
Economics of 821

Railroad Engineering
Progress in 57

Railroad Train Control
Light-beam train control 692

Railroad Transportation
Development of 457
Plan to meet motor-bus competition (Ed) 639

Railroads
Electrification 469
George Bennie monorail-plane suspended type 862
Merger plan of The Interstate Commerce Commission (Ed) 163
Trend in the development of railroad engineering 478

Rails
Rail-head wear, measurement of 863

Rateau, Auguste C. E.
Biography 301
Obituary 245, 571

Raymond, F. E.
Uneconomical minimum-cost production 899

Rayon
History of 445

Rays
Cosmic 698
X-rays, applications 1112

Rech, H. F.
Boiler-metal embrittlement (C) 82

Reciprocating Engines
Crankless type 1104

Reed, Edward J.
Biography 291

Refractory Materials
Manufacturing methods 18

Refrigeration
See also Ice Industry
Automatic refrigeration at Harvard University 69
Carba dry-ice process 1089
CO_2 for manufacture of refrigerant (CT) 83
Cooling and heating with one unit 992
Direct-expansion quick-freezing machine 1088
Early developments 353
Mechanical, for railroad cars, with axle drive 796
Multi-feed, multi-suction evaporating system 69
Oldham factor chart for calculation and comparison of power absorbed in vapor compression 548
Organic fluorides as refrigerants 714
Tendencies in modern design, outworn theories 547
Superheated ammonia vapor, thermodynamic properties of 548
Use in the arts 356

Refrigerators
Treating wood for use in lining refrigerator cooling rooms (CT) 566

Research
Dedication of the Packard laboratory (Ed) 1108
In dull times (Ed) 1107
Users' viewpoint 614

Reuleaux, Franz
Biography 292

Reynolds, Edwin
Biography 283

Rice, Calvin W.
Fifty Years of the A.S.M.E. 261

Rivets
Machine for cold-heading 230

Robinson, C. Snelling
Progress in the iron and steel industry in 1929 23

Roe, Joseph W.
Impressions of the World Engineering Congress 243
Melville medalist 523
The Machine Age 311

Roller Bearings
See Bearings, Roller

Rolling Mills
Inland Steel Company's new merchant mill 977
Six-hour day in the sheet mills 722

Rubber
Linatex rubber 856

Russia
Good out of (Ed) 1008

Rutherford, Sir Ernest
Transmutation of matter 780

Ryan, W. J.
Leaky seams and rivets in boilers following use of water softeners (CT) 162

S

Sackett, R. L.
Report of the investigation of engineering education, 1923–1929 940

Safety Engineering
See also Accident Prevention
Industrial medicine 70

Safety Factors
How safe is a factor of safety? 984

Sague, James Edward
Obituary 726

Salmon, F. W.
Bending a heavy I-beam (CT) 720

Samans, Walter
The petroleum industry 421

Sand
Hydraulic, conveying of (CT) 1004

Schneider, Henri Adolphe Eugene
Biography 292

Schools
See Education
Air Pilots—see Aeronautical Education

Schwab, Charles M.
Biography 289

Science
Popularization of (Ed) 164

Scott, C. F.
Receives Edison medal 242

Seaplanes
See Aerial Transportation; Airplanes

See, Horace
Biography 279

Seely, Fred B.
The statistical element in mechanics of materials 839

Sellers, Coleman
Biography 279

Sellers, Coleman, 3rd
The use of tungsten carbide as a cutting material on heavy machine tools 683

Selling Short
Use of (Ed) 1008

Seyfert, S. S., and Larkin, F. V.
A new engineering laboratory 883

Shafts
Critical speeds 493
Torsion of shafts 495

Sheet Steel
See Steel Sheet

Shibusawa, Ei-ichi
Biography 303

Ship Design
Armor and the Washington cruiser 709
Safety 865

Ship Loading
See Conveyors; Cranes; Industrial Trucks; Materials Handling

Ship Propulsion
Application of electric machinery to 792
Electric 793

Shipman, W. H.
Design of steam piping to care for expansion (C) 1104

Ships
Motorship "Lafayette" 887

Siemens, C. William
Biography ... 292
Silk
Commercial development ... 444
Simplification
See Standardization
Simplified Practice
See Standardization
Small Arms
Bullet markings ... 107, 1065
Smith, E. D.
Progress in materials handling ... 32
Smith, Ed. S., Jr.
Fluid metering ... 372
Fluid metering in practice ... 968
Smith, Jesse Merrick
Biography ... 284
Smith, L. B., and Keyes, F. G.
Report on progress in steam research at the Massachusetts Institute of Technology ... 123
Vapor pressure of water from the ice point to the critical temperature ... 124
Smith, Oberlin
Biography ... 280
Smoke Abatement
Claims for damage ... 895
In New Jersey (Ed) ... 1108
Photographic recording of smoke ... 604
Skid Platforms, Skids
See Materials Handling
Sound
Photography of (Ed) ... 1006
Spark Plugs
New Graham-Paige type ... 1083
Sparks, A. F.
Early hydraulic-turbine installation at Niagara Falls (C) ... 719
Spencer, Frank C.
Tungsten-carbide cutting materials ... 777
Sperry, Elmer Ambrose
Biography ... 289
Died June 16, 1930 (Ed) ... 722
Obituary ... 870
Progress and prospects in the field of mechanical engineering ... 3
Spindles
See Machine Tools, Spindles; Woodworking Machinery, Spindles
Standardization
American standards listed ... 77
A.S.M.E. and A.S.A. ... 209
Building-exits code ... 76
Development of German national fits ... 905
Electric-motor-frame dimensions ... 161
Federal specifications and American standards ... 553
Federal specifications and national defense (Ed) ... 569
Influence in heat and power industry ... 210
Influence in the mechanical industries ... 209
Influence on machine design ... 211
Influence on quantity production ... 213
Iron and steel bars ... 717
Limit gaging ... 77
Mechanical standards advisory council ... 552
Meeting on steel pipe flanges and flanged fittings ... 717
Relation to management ... 30
Safety code for grandstands ... 237
Symbols for heat and thermodynamics ... 554
Transmission roller chains, sprockets, and cutters ... 237
Wrought-iron and wrought-steel pipe and tubing ... 553
Standardization, Engineering and Industrial
See pp. 76, 161, 237, 552, 631, 717, 799, ... 866, 932, 997, 1105
Standards
Graphical symbols used in radio communication ... 556
New American ... 553, 631, 866, 998, 1105
Pressure and vacuum gage ... 866
Track bolts and nuts ... 718
25-lb. cast-iron pipe flanges and flanged fittings ... 800
Woodruff keys, key slots, and cutters ... 718
Starr, John E.
Refrigeration ... 353
Steam
Adiabatic of in p-v coordinates ... 133
Calorimetric measurements at saturation limit ... 128
Critical relations between water and ... 160
Heat transfer in the condensation of saturated and superheated steam in a horizontal tube ... 231
High-pressure, economics of ... 748
Liquid line and behind it ... 135
Progress in research at the Bureau of Standards ... 127
Quality instruments and apparatus for determination of ... 636
Report on progress at the Massachusetts Institute of Technology ... 123
Thermal properties, report on ... 119
Vapor-pressure equations ... 124
Steam Condensers
Cooling-water consumption in ... 926
Surface, performance of the several types of ... 66
Troubles, Analysis of ... 923
Steam Economizers
Development ... 861
Steam Engines
Anderson rotary piston ... 628
Chemicals remove oil from engine condensate ... 990
Crankless reciprocating machines (C) ... 1104
Governor gear for a high-speed reciprocating steam engine ... 716
High-pressure steam engine with opposed pistons ... 993
Steam Pipe Lines
See also Pipe Lines
Design of, to care for expansion (C) ... 1103
Steam Power
Engineering progress ... 47
Steam Power Plants
See Power Plants
Steam Tables
Agreement on ... 141
Berlin conference (Ed) ... 936
Callendar's extended steam tables ... 71
Comparisons of new with old ... 130
Progress in ... 119
Skeleton steam-tables conference ... 120
Steam Turbines
Acceptance tests, international rules and regulations for ... 1010
Auxiliary drives ... 761
Average American turbo-alternator efficiencies ... 750
Developed by the General Electric Company ... 157
Developments affecting economics of large-steam-turbine practice ... 929
Double-rotation type ... 156
Economic considerations in application to power generation ... 673, 757
Fall increaser, Clemens Herschel's invention of (C) ... 801
Governors, operating characteristics of ... 713
High efficiencies ... 795
Introduction in central stations ... 359
Steam pressures and temperatures ... 677
Turbo-generator units over 60,000 kw. in operation or under construction ... 674
Turbo set for 1000-deg. fahr. steam temperature ... 861
Steel
See also Alloy Steels
British steel through American eyes (Ed) ... 935
Chemical specifications of ... 788
Die steels in British practice, characteristics of ... 70
Flame cutting harmful practices ... 628
Markets for ... 418
Musso process ... 712
Processes ... 415
Prospective geography of the steel industry (Ed) ... 869
Sheets and strips for airplanes ... 781
Stress at elevated temperatures, permanence of dimensions under ... 1050
Steel Industry
Research in (Ed) ... 240
Steel Mills
Hours of labor ... 418
Safety improvements ... 418
Steel, Sheet
Practical information (BR) ... 1112
Stetson, George A.
Appointed editor of A.S.M.E. publications (Ed) ... 84
Stevens, John A.
Obituary ... 87
Stimson, H. F., Fiock, E. F., and Osborne, N. S.
Report on progress in steam research at the Bureau of Standards, with determinations of heat content and latent heat up to 270 deg. cent ... 127
Stocks
Values and prices (Ed) ... 86
Stokers
Development ... 16, 335
Locomotives, application to ... 462
Roney overfeed stokers installed fifty years ago ... 360
Strachan, John E.
Machining seamless forged steel drums for high-pressure work ... 751
Stresses
Concentrated, method of measuring ... 611
Cyclic, influence on corrosion ... 619
Structures
Vibration, natural frequencies of, calculation ... 607
Superheated Steam
See also Steam
Use in naval vessels ... 483
Superheaters
Electrically welded drum, test of ... 1063
Locomotives, application to ... 462
Survey of Engineering Progress
See pp. 63, 149, 222, 536, 618, 705, 787, ... 855, 919, 986, 1081
Swain, P. W., and Blake, A. D.
Fifty years of power ... 321
Swasey, Ambrose
Biography ... 283
Sweeney, O. R., and Winfrey, Robley
The production of synthetic lumber from cornstalks ... 849
Sweet, John Edson
Biography ... 278
Swiss Locomotive and Machine Works
The Wiesinger high-pressure locomotives (C) ... 633

T

Tanks
See Boilers; Pressure Vessels
Tanks, Military
Carden Loyd baby tank ... 794
Taylor, Frederick Winslow
Biography ... 284
Telephone Equipment
Production of plastic molded parts ... 889
Teletypes
Transmission of orders by ... 73
Tetraethyl Lead
See Anti-Knock Compounds
Textile Fibers
New German flax fiber (Ed) ... 803
Textile Industry
Progress in ... 59
Progress report ... 440
Textile Machinery
Development ... 440
Textile Plants
Old and new types ... 446
Textiles
Balloon cloth ... 781
Drying ... 443
Dyes for ... 443
Finishing ... 446
Knitting ... 444
Printing developments ... 445
Special processes ... 444
Weaving ... 442
Thermic Syphon
Nicholson ... 464
Thermodynamics
See also Steam; Water
Ammonia refrigerating and steam power cycles, analogy between ... 551
Symbols, standardization of ... 554
Thompson, C. M.
The application of tungsten carbide to circular saws ... 681
Thompson, Eustis H.
Crane lubrication ... 1059
Thompson, O. C.
The economic status of engineers in the federal service (C) ... 567
Thread-Milling Machine
Heavy-duty ... 225
Thurston, Robert Henry
Biography ... 278
Mechanical engineering fifty years ago ... 315
Thyrite
Compound insulating and conducting material ... 223
Tietjens, O.
Mechanics of fluid bodies ... 496
Tilden, C. J.
Engineering mechanics (BR) ... 644
Timber
See also Wood
Hardwood resources ... 433
Scandinavian gang saws for closer utilization of (C) ... 1001
Timoshenko, S.
Recent developments in the application of mechanics to machine design ... 607
Theory of elasticity ... 494

Tin Plate
Practical Information on (Ed)..... 1112
Rusting in storage (CT)..... 162
Tools
See Cutting Tools; Gages; Jigs and Fixtures; Machine Tools; Measuring Instruments; Metal Cutting
Torque Meter
For aircraft engine-flight..... 989
Torsional Vibration
See Vibrations
Towne, Henry Robinson
Biography..... 279
Trade Schools
See Education
Traffic Control
Speeding up automobile traffic (Ed)..... 164
Train Control
See Railroad Train Control
Training Courses
See Education
Training Schools
See Education
Transportation
See also Aerial Transportation; Railroad Transportation
Fifty years of..... 455
Trees
See Timber
Tresca, Henri
Biography..... 292
Trucks, Industrial
See Industrial Trucks; Materials Handling
Tube Mills
See Rolling Mills
Tubes
Recent developments in the German iron and steel industry..... 208
Straightening machine with cross-roll drive through spiral gears..... 714
Tubes, Boiler
See Boiler Tubes
Tungsten Carbide
See also Alloy Steel
Application to circular saws..... 681
Progress report No. 2..... 777
Use as a cutting material on heavy machine tools..... 683
Tungsten Steel
See Alloy Steel
Turbines
See Gas Turbines, Hydraulic Turbines, Steam Turbines

U

Unemployment
Control of (Ed)..... 1007
Remedy for—An English view..... 774
Unemployables de luxe (Ed)..... 802
Unfired Pressure Vessels
Fusion welding of, proposed specifications for..... 1096
Unterberger, M.
Bending a heavy I-beam (CT)..... 238
Unwin, William Cawthorne
Biography..... 296

V

Van Leer, Blake R., and Moody, Lewis F.
Fifty years' progress in hydraulics..... 366
Vauclain, Samuel Matthews
Biography..... 302
Ventilation
See Heating and Ventilation
Vibrations
Rotating machinery, calculations for use in design of..... 607
Shaft whipping..... 493
Turbine-disk-wheel vibration, prevention of..... 494
Viscosity
Liquids, determination for..... 233
Vivian, A. C.
Transverse tests on cast iron (C)..... 933
Von Miller, Oskar
Biography..... 299
Vowles, Hugh P.
Joseph's Well (C)..... 163
The engineer as ruler..... 103

W

Wage Incentives
See Wage-Payment Plans
Wage-Payment Plans
Group applications of incentive plans. 29, 453
Group incentives (BR)..... 808
Wage-incentive methods (BR)..... 643
Wages
Average per worker, 1880–1930..... 345
Wagner, C.
Etching numbers on thickness gages (CT) 1005
Wahl, A. M., Nadai, A., and Baud, R. V.
Stress distribution and plastic flow in an elastic plate with a circular hole..... 187
Walker, Francis A.
Biography..... 294
Wall, Wm. G.
Engineering problems of modern motor cars..... 1070
Walsh, James L.
National defense..... 507
Warner, Worcester Reed
Biography..... 281
Tetralin
For cleaning pipes..... 993
Warner & Swasey Company
Fiftieth anniversary..... 725
Waste Elimination
Effect on industry from a managerial standpoint..... 31
Periodic campaigns..... 453
Water
Critical relations between steam and.... 160
Latent heat of evaporation of water..... 124
Properties of, at saturation limit derived from calorimetric measurements..... 128
Substitutes for, in cooling (Ed)..... 85
Vapor pressure from ice point to critical temperature..... 124
Vapor-pressure equations..... 124
Water Cooling Towers
Methods used by petroleum industry.... 989
Water Measurement
See also Flow of Fluids
Methods developed in the last fifty years. 371
Salt-velocity method..... 375
Tendency among power companies..... 21
Venturi meter use..... 366
Water Pipe Lines
See Pipe Lines
Water Power
See Hydraulics; Hydroelectric Power Plants
Water Treatment
See Feedwater
Water Wheels
Demountable runners..... 388
Kaplan automatic adjustable-blade..... 621
Pelton wheel..... 386
Water Purification
See Feedwater Treatment; Water Treatment
Water Sterilization
See Feedwater Treatment, Water Treatment
Water Treatment
See also Feedwater Treatment
Catadyn method of water sterilization... 626
Waters, E. O.
Progress of fluid-film lubrication (D).... 117
Weaving
See Textiles Weaving
Webster, Hosea
Steam generators..... 359
Weir, William Douglas
Biography..... 302
Welding
Aircraft construction..... 784
Arc welding in industry..... 844
Extensive use of..... 417
Gas equipment, safety rules for..... 799
Power boilers, drums or shells of, specifications proposed for..... 235
Pressure vessels, test results on..... 198
Progress..... 1013
Wellman, Samuel T.
Biography..... 282
Wenk, Morris
Counterbalancing freight locomotives (CT)..... 635
Westinghouse, George
Biography..... 285
White, Wm. Braid
Progress in the wood industries..... 61
White, William Henry
Biography..... 297
White, William Monroe
American hydraulic turbines..... 390
Wind Structure
See Aerodynamics
Winfrey, Robley, and Sweeney, O. R.
The production of synthetic lumber from cornstalks..... 849
Winston, James
Bending a heavy I-beam (CT)..... 566
Wire
Bridge wire, cold-drawn, tests of..... 931
Copper wire bars, new process for manufacture of..... 923
Wire Rope
Research (Ed)..... 568
Use by steam-electric generating plants.. 529
Wohlenberg, Walter J.
Combustion radiation and the Planck quantum theory.....852, 915, 981, 1075
Wood
See also Lumber; Timber
Heating value of..... 538
Treating for use in lining refrigerator cooling rooms..... 566
Wood, Albert C.
Industrial power..... 340
Wood Flour
Development..... 432
Wood Preservation
Treating wood for use in lining refrigeration cooling rooms (CT)..... 1004
Wood Products
Waste wood as a source..... 953
Wood Substitutes
Process employed in making..... 850
Woodworking Industry
Growth during the last half-century..... 429
Progress in.....61, 434
Woodwork education, developments in.. 433
Woodworking Machinery
Beginnings and growth of..... 430
Woolfenden, H. L.
Boiler-metal embrittlement (C)..... 239
World Engineering Congress
Impressions of..... 243
World Power Conference
Second, reports of..... 805
Worm Gears
See Gears
Worthington, Henry Rossiter
Biography..... 290
Wright, Orville
Biography..... 300
Guggenheim medalist..... 523
Wright, Roy V.
Fifty years of transportation..... 455
Wrought Iron
Making mechanically in 700-lb. molds... 794

X

X-Rays
Applications (BR)..... 1112

Y

Yarrow, Alfred Fernandez
Biography..... 300
Young, H. F., Deutsch, Z. G., and Larsen, A. M.
Design of steam piping to care for expansion (C)..... 1104
Young, Owen D.
International settlements..... 743
Young Plan of International Settlement
Compared with Dawes plan..... 743
Younger, John
The automotive industry..... 491
Youse, H. J.
The steam motor car (C)..... 634

Z

Zahm, Albert F.
Division of aeronautics of the Library of Congress..... 845
Theoretical aerodynamics..... 499
Zeolite
See Feedwater, Feedwater Treatment